Supporting Information

Ga-Ions Enhanced and Particle Shape Dependent Generation of Reactive Oxygen Species in X-ray Irradiated Composites

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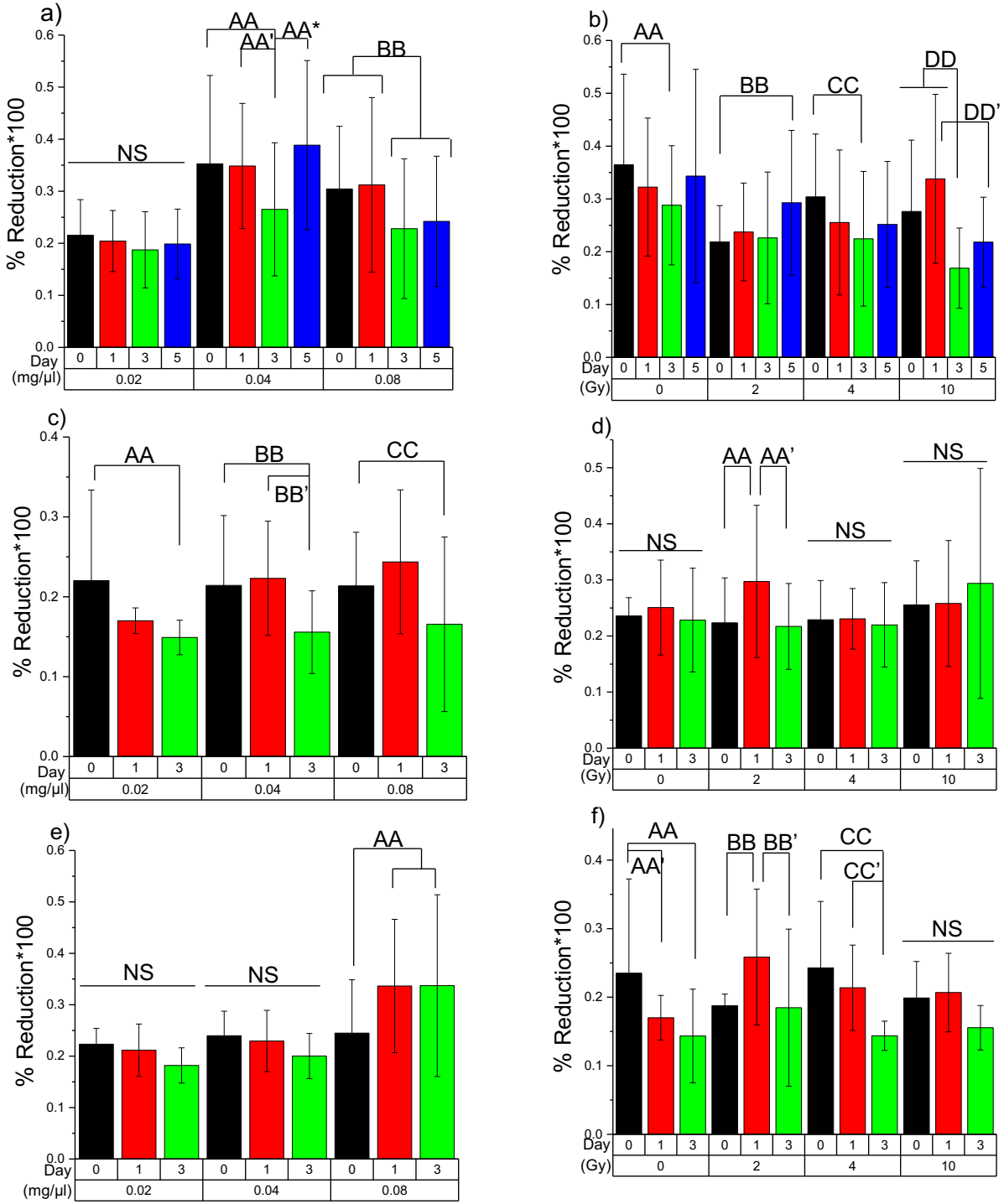


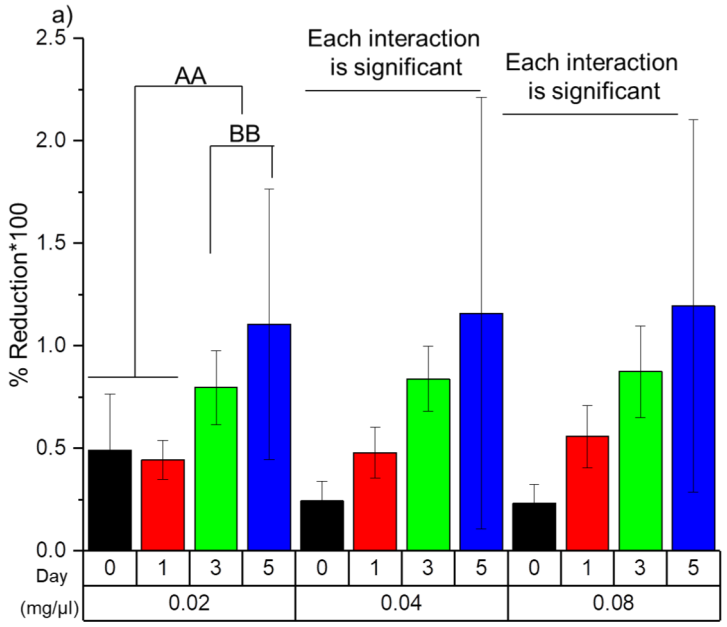
Figure 1s a-f

a) AB assay conducted in the presence of $Ga(NO_3)_3$ at the indicated concentration and time; b) AB assay conducted in the presence of $Ga(NO_3)_3$ at the indicated time, following the specified radiation treatment. NS indicates no significance.

c) AB assay conducted in the presence of the anisotropic GaOOH at the indicated concentration and time; d) AB assay conducted in the presence of the anisotropic GaOOH at the indicated time, following the specified radiation treatment.

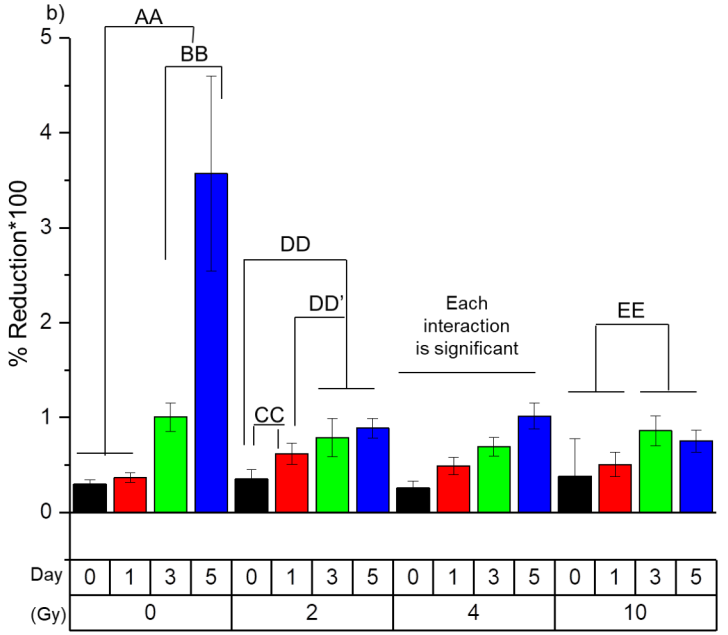
e) AB assay conducted in the presence of the orzo GaOOH at the indicated concentration and time; f) AB assay conducted in the presence of the orzo GaOOH at the indicated time, following the specified radiation treatment.

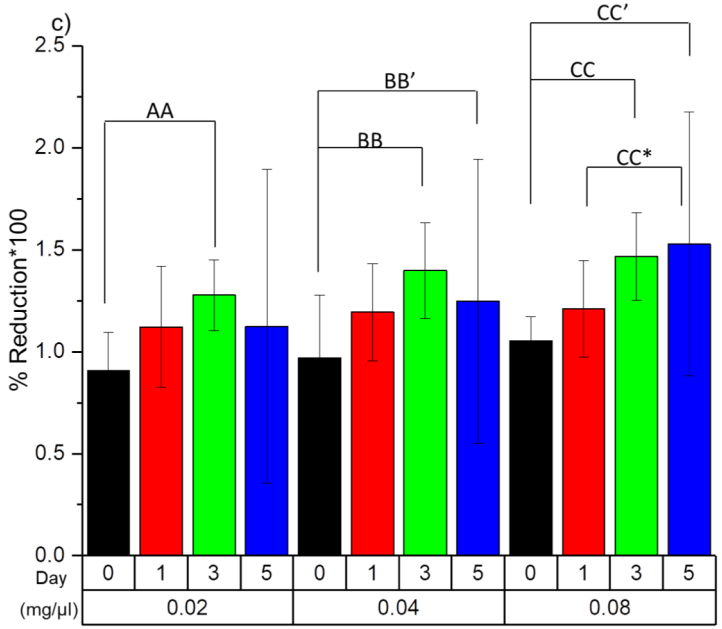
Figure S2 a-d



a) ROS assay conducted in the presence of anisotropic GaOOH nanoparticles and PC12 cells at the indicated material concentration and time

b) b) ROS assay conducted in the presence of anisotropic GaOOH nanoparticles and PC12 cells at the indicated radiation treatment and time





c) ROS assay conducted in the presence of anisotropic GaOOH nanoparticles at the indicated material concentration and time

d) ROS assay conducted in the presence of GaOOH nanoparticles at the indicated radiation treatment and time

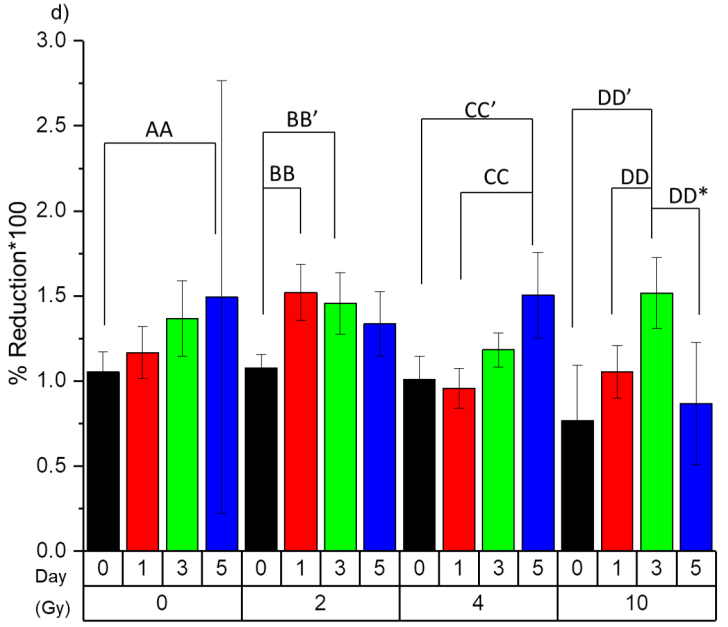
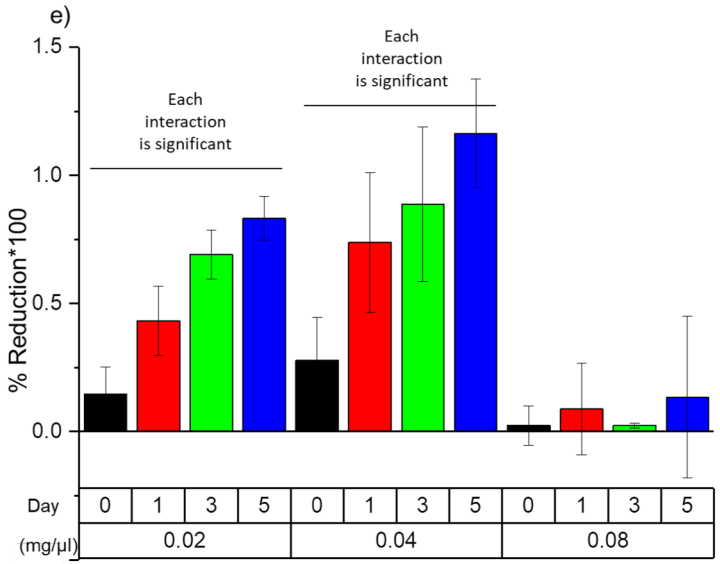
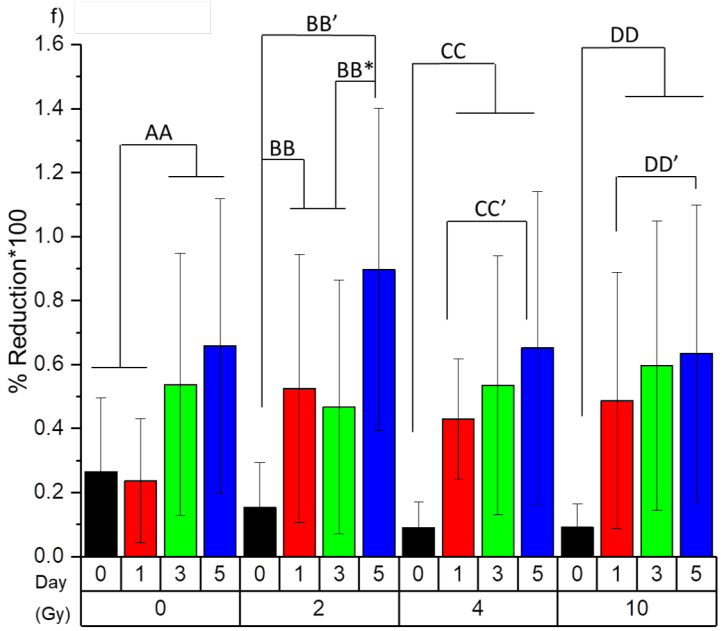


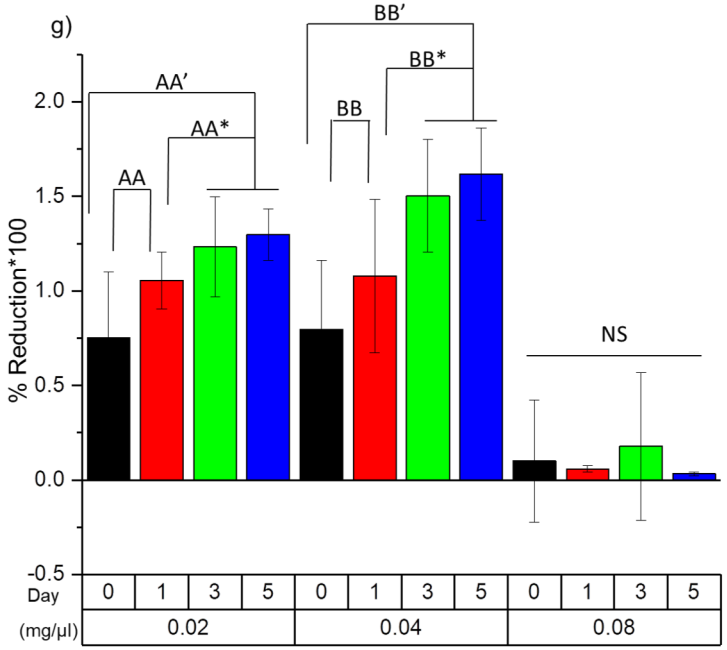
Figure S2 e-h



e) ROS assay conducted in the presence of $Ga(NO_3)_3$ salt and PC12 cells at the indicated material concentration and time

f) ROS assay conducted in the presence of $Ga(NO_3)_3$ salt and PC12 cells at the indicated radiation treatment and time





g) ROS assay conducted in the presence of $Ga(NO_3)_3$ salt at the indicated material concentration and time

h) ROS assay conducted in the presence of $Ga(NO_3)_3$ salt at the indicated radiation treatment and time

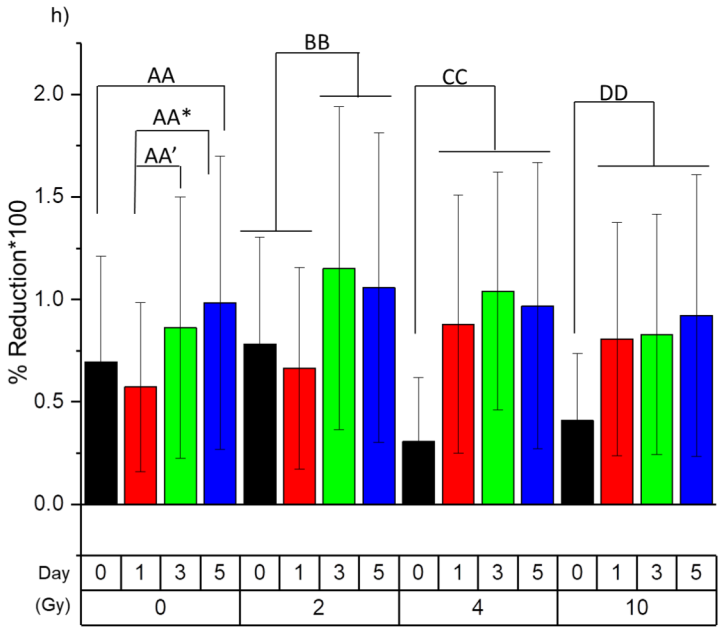
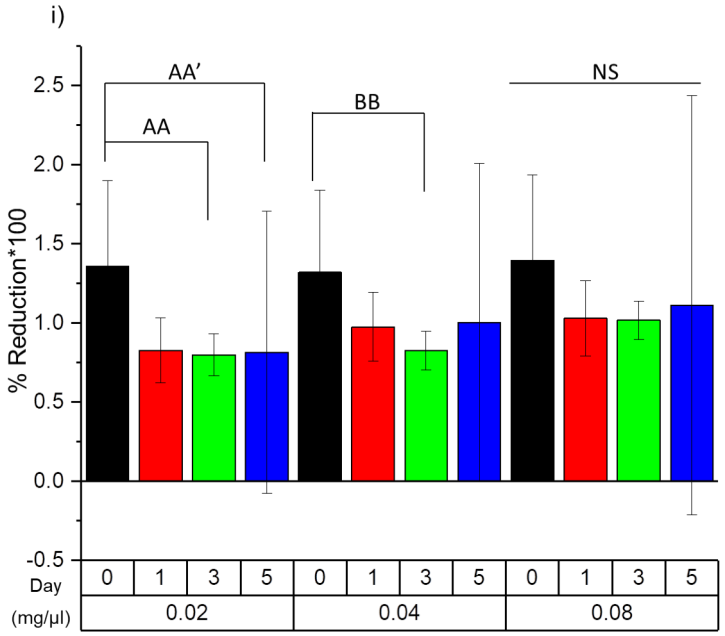
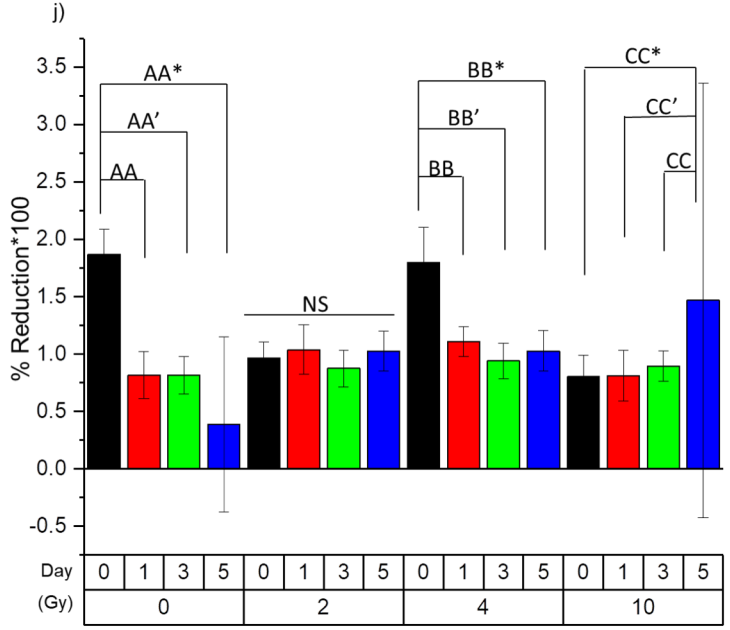


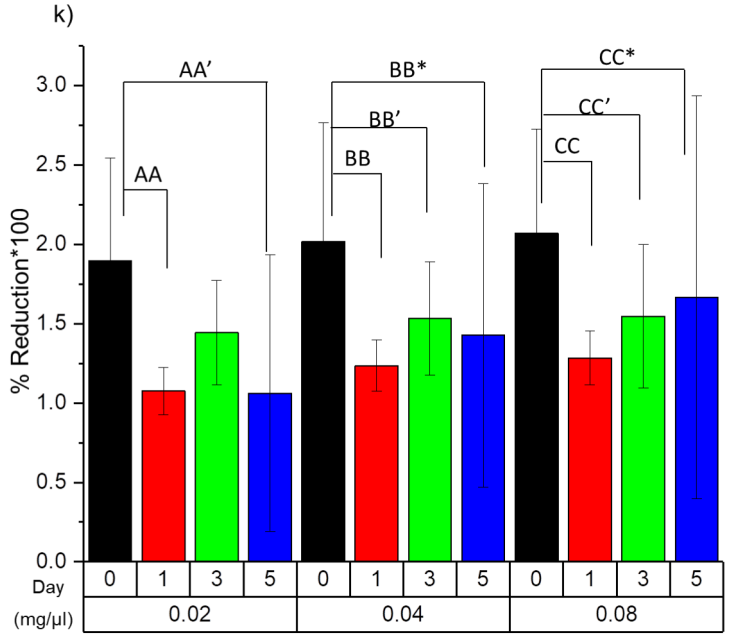
Figure S2 i-l



i) ROS assay conducted in the presence of orzo GaOOH and PC12 cells at the indicated material concentration and time

j) ROS assay conducted in the presence of orzo GaOOH and PC12 cells at the indicated radiation treatment and time





k) ROS assay conducted in the presence of orzo GaOOH at the indicated material concentration and time

l) ROS assay conducted in the presence of orzo GaOOH at the indicated radiation treatment and time

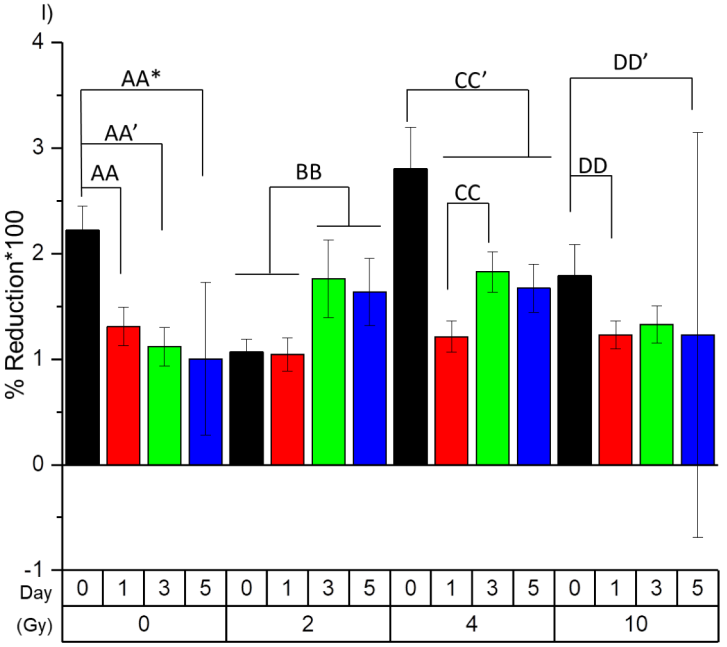
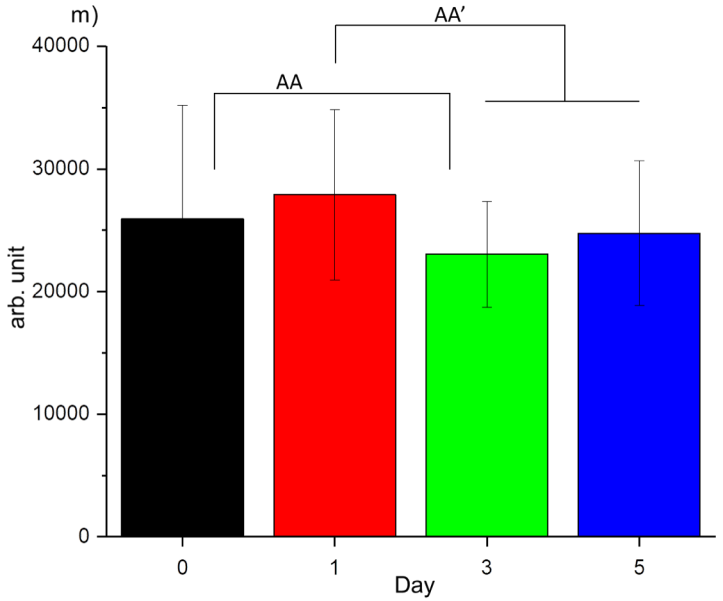
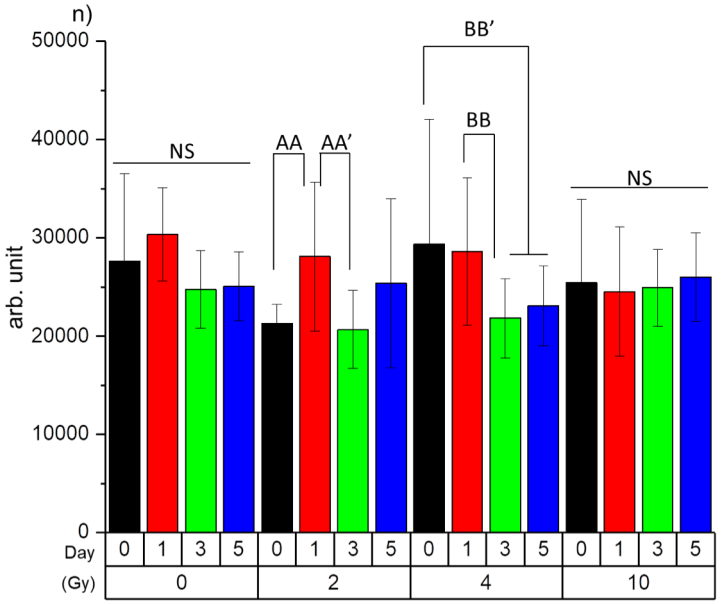


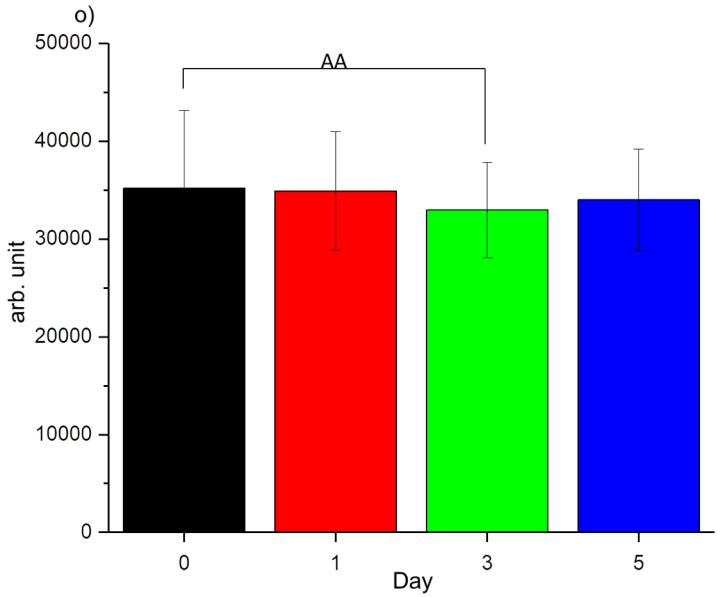
Figure S2 m-p



m) ROS assay conducted without any Ga source in the composite in the presence of PC12 cells at the indicated time

n) ROS assay conducted without any Ga source in the composite in the presence of PC12 cells at the indicated radiation treatment and time





o) ROS assay conducted at the indicated time with composites containing no Ga source and in the absence of any cells.

p) ROS assay conducted at the indicated radiation treatment and time with composites containing no Ga source and in the absence of any cells.

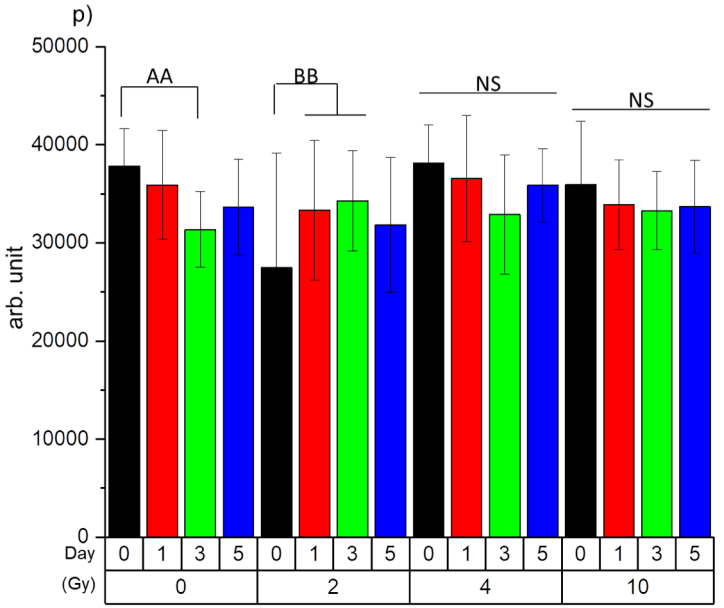
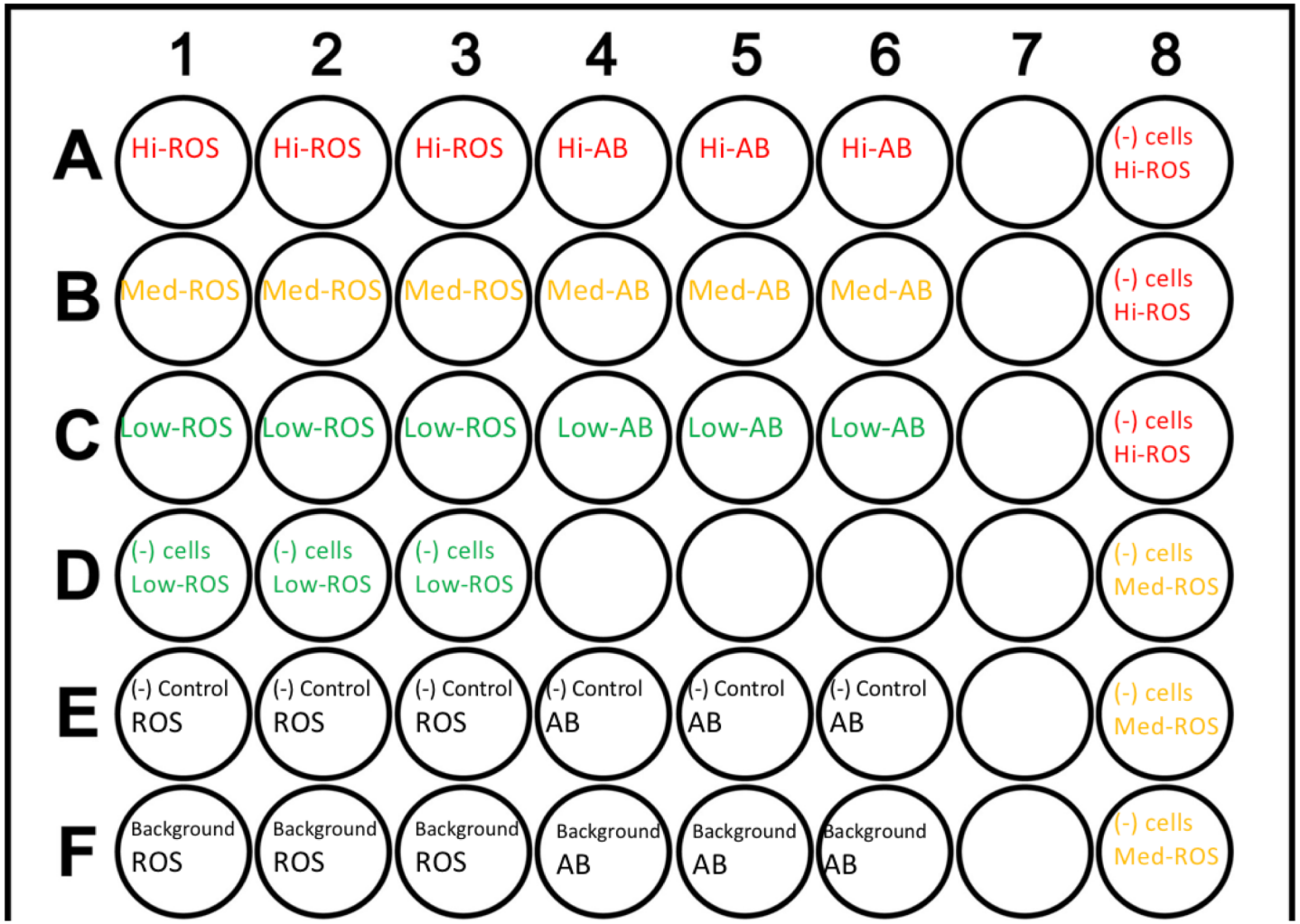


Figure S3. Plate design for different testing



HI-0.08mg/ul
Med – 0.04mg/ul
Low – 0.02mg/ul
(-) cells – no cells
(-) control – with cells, no material
Background ROS – just cell media and gel – no dye
The same plate design was used for all radiation treatments.

Figure S4. Summary ICP-MS data for the Orzo particles.

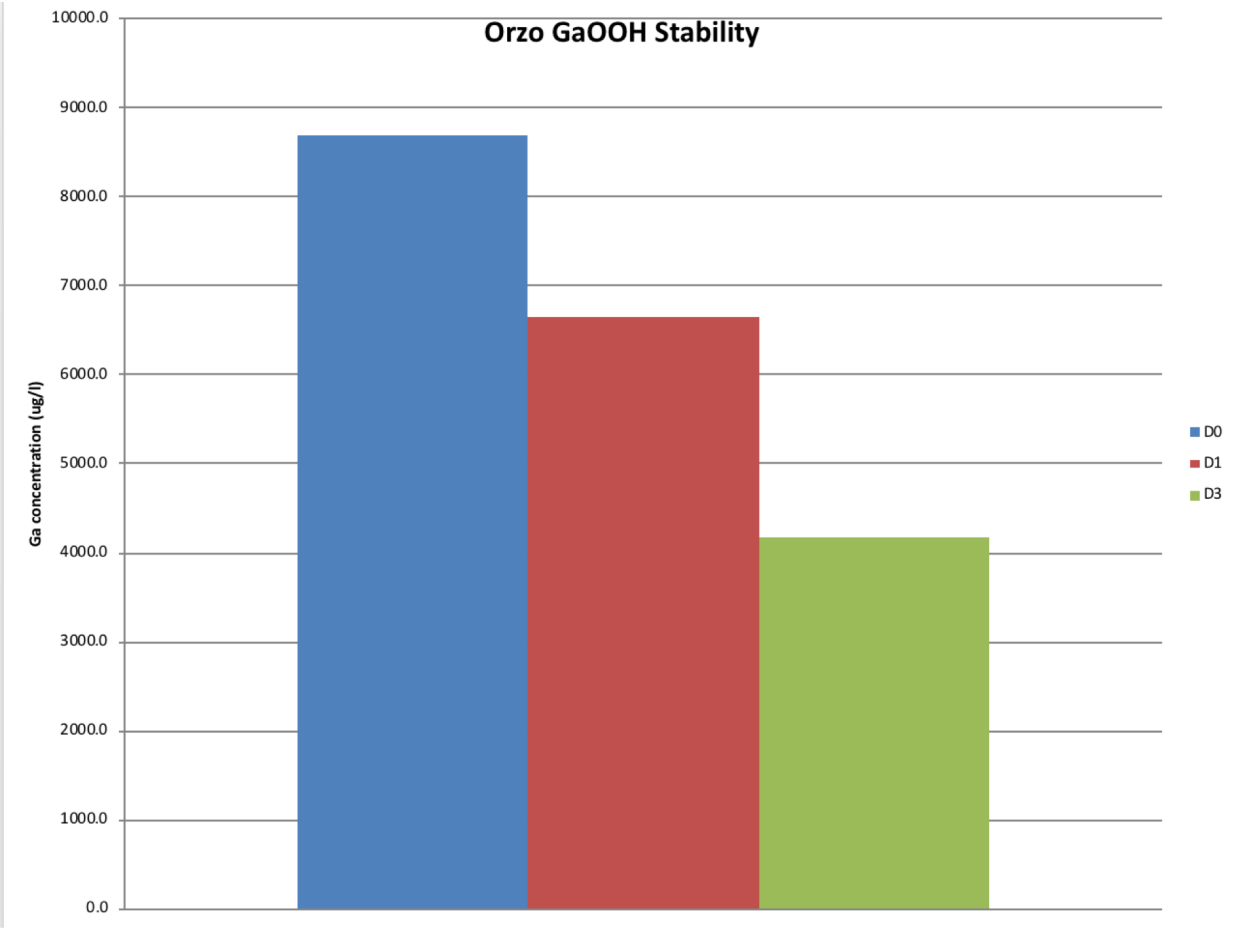


Figure S5. Summary ICP-MS data for the Anisotropic particles.

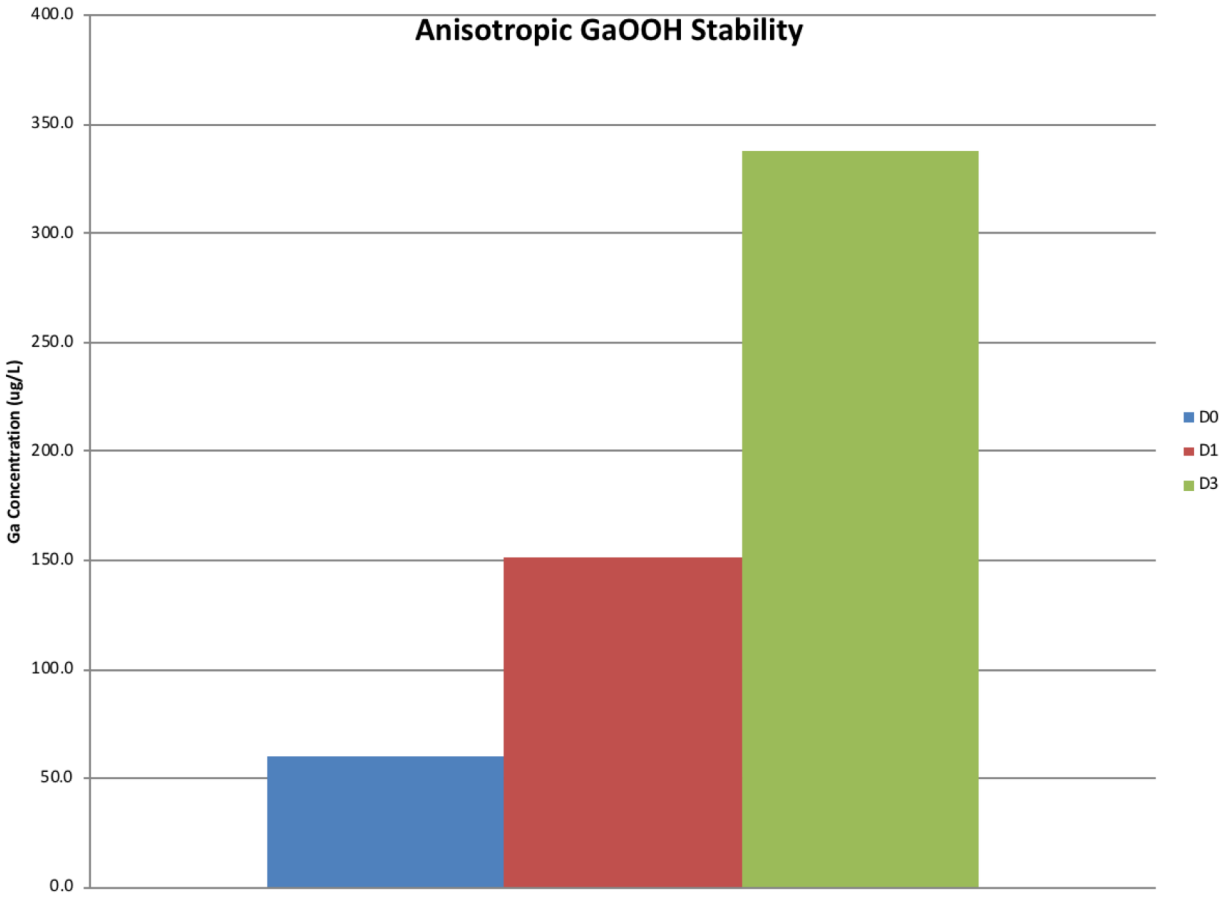


Table S1. Summary of amounts of Ga leached in solution. All values are ug/L.

GaOOH type	Ga leached, day 0	Ga leached, day 1	Ga leached, day 3
Orzo	8,701±823	6,648±45	4,178±194
Anisotropic	61±6	152±16	338±9